WE CLAIM:

CLAIMS

1. In a multidimensional digital frame structure, a method for selectively broadcasting, the method comprising:

transmitting a frame with an overhead section including node identifiers; and

synchronizing the broadcast frame in response to acknowledging the node identifiers.

2. The method of claim 1 further comprising:

selecting node identifiers for broadcast; and

wherein transmitting a frame with an overhead section including node identifiers includes broadcasting the selected node identifiers.

3. The method of claim 2 further comprising:

defining a frame having an overhead section with a first plurality of overhead section bytes;

selecting frame synchronization bytes for insertion into the broadcast frame overhead section; and

wherein selecting node identifiers includes using the selected frame synchronization bytes.

4. The method of claim 3 wherein selecting node identifiers for broadcast includes selecting a plurality of node identifiers from a plurality of frame synchronization bytes.

5. The method of claim 3 wherein synchronizing the broadcast frame in response to acknowledging the node identifiers includes synchronizing frames at a plurality of nodes in response to acknowledging the plurality of node identifiers.

6. The method of claim 5 further comprising:

associating node identifiers with nodes.

7. The method of claim 6 wherein selecting node identifiers for broadcast includes selecting a first node identifier;

wherein associating node identifiers with nodes includes associating the first node identifier with a first node; and

wherein synchronizing the frame in response to acknowledging the node identifiers includes synchronizing the frame at a first node in response to acknowledging the first node identifier.

8. The method of claim 7 wherein associating node identifiers with nodes includes associating the first node identifier with a second node; and

wherein synchronizing the frame in response to acknowledging the node identifiers includes synchronizing the frame at

the first and second nodes in response to acknowledging the first node identifier.

9. The method of claim 7 wherein selecting node identifiers for broadcast includes selecting a second node identifier;

wherein associating node identifiers with nodes includes associating the second node identifier with a second node; and

wherein synchronizing the frame in response to acknowledging the node identifiers includes synchronizing the frame at the first node in response to the first node identifier, and the second node in response to the second node identifier.

10. The method of claim 4 wherein selecting node identifiers for broadcast from a plurality of frame synchronization bytes includes associating frame synchronization byte groups with node identifiers.

11. The method of claim 10 wherein selecting frame synchronization bytes for insertion into the broadcast frame includes selecting the quantity of frame synchronization bytes in the overhead section; and

wherein selecting node identifiers by associating frame synchronization byte groups with node identifiers includes associating node identifiers with frame synchronization byte groups that are differentiated by quantity.

12. The method of claim 11 wherein selecting the quantity of frame synchronization bytes in the overhead section includes selecting frame synchronization bytes in the range from zero to the first plurality.

13. The method of claim 10 wherein selecting frame synchronization bytes for insertion into the broadcast frame includes selecting the location of frame synchronization bytes in the overhead section; and

wherein selecting node identifiers by associating frame synchronization byte groups with node identifiers includes associating node identifiers with frame synchronization byte groups that are differentiated by location.

14. The method of claim 13 wherein selecting the location of frame synchronization bytes in the overhead section includes selecting frame synchronization bytes in the range from zero to a first plurality of locations.

15. The method of claim 10 wherein selecting frame synchronization bytes for insertion into the broadcast frame includes selecting the value of frame synchronization bytes in the overhead section; and

wherein selecting node identifiers by associating frame synchronization byte groups with node identifiers includes associating node identifiers with frame synchronization byte groups that are differentiated by byte value.

16. The method of claim 15 wherein selecting the value of frame synchronization bytes in the overhead section includes selecting a second plurality of bits for each frame synchronization byte, where each byte includes a second plurality of bits.

17. The method of claim 6 further comprising:

at each node, acknowledging a node identifier;

selecting frame synchronization bytes to form the acknowledged node identifier;

grouping received frame synchronization bytes; and

comparing the selected frame synchronization bytes with the received grouping of frame synchronization bytes.

18. The method of claim 17 further comprising:

selecting a frame synchronization byte bit error rate; and

wherein grouping frame synchronization bytes includes grouping frame synchronization bytes having a bit error rate that is less than, or equal to, the selected bit error rate.

19. The method of claim 18 wherein selecting a frame synchronization byte bit error rate includes selecting a number of permitted errors for each frame synchronization byte in the range from zero to the second plurality of errors, where each frame synchronization byte includes a second plurality of bits.

20. The method of claim 17 wherein selecting frame synchronization bytes includes selecting a group of frame synchronization bytes differentiated by quantity.

21. The method of claim 17 wherein selecting frame synchronization bytes includes selecting a group of frame synchronization bytes differentiated by byte location.

22. The method of claim 17 wherein selecting frame synchronization bytes includes selecting a group frame synchronization bytes differentiated by byte value.

23. In a multidimensional digital frame structure, a method for selectively receiving a broadcast message, the method comprising:

receiving a broadcast frame with an overhead section including node identifiers; and

synchronizing the broadcast frame in response to acknowledging the node identifiers.

24. The method of claim 23 further comprising:

at each node, acknowledging a node identifier; and

wherein synchronizing the broadcast frame in response to the node identifiers includes:

selecting frame synchronization bytes to form the acknowledged node identifier;

grouping received frame synchronization bytes; and

comparing the selected frame synchronization bytes with the received grouping of frame synchronization bytes.

25. The method of claim 23 wherein acknowledging a node identifier includes selecting a node identifier from a plurality of node identifiers.

26. The method of claim 25 wherein receiving a broadcast frame includes receiving a broadcast frame including a first node identifier;

wherein acknowledging a node identifier includes a first node acknowledging a first node identifier;

wherein synchronizing the broadcast frame in response to acknowledging the node identifiers includes synchronizing the broadcast frame at the first node in response to the first node identifier.

27. The method of claim 26 wherein acknowledging a node identifier includes a second node acknowledging a first node identifier;

wherein synchronizing the broadcast frame in response to acknowledging the node identifiers includes synchronizing the broadcast frame at the first and the second nodes in response to the first node identifier.

28. The method of claim 26 wherein receiving a broadcast frame includes receiving a broadcast frame with a second node identifier;

wherein acknowledging a node identifier includes a second node acknowledging a second node identifier;

wherein synchronizing the broadcast frame in response to acknowledging the node identifiers includes synchronizing the broadcast frame at the first node in response to the first node identifier and at the second node in response to the second node identifier.

29. The method of claim 25 wherein selecting frame synchronization bytes to form the acknowledged node identifier includes selecting a group of frame synchronization bytes differentiated by quantity.

30. The method of claim 25 wherein selecting frame synchronization bytes to form the acknowledged node identifier includes selecting a group of frame synchronization bytes differentiated by byte location.

31. The method of claim 25 wherein selecting frame synchronization bytes to form the acknowledged node identifier includes selecting a group of frame synchronization bytes differentiated by byte value.

32. The method of claim 24 further comprising:

selecting a frame synchronization byte bit error rate; and

wherein grouping frame synchronization bytes includes grouping frame synchronization bytes having a bit error rate that is less than, or equal to, the selected bit error rate.

33. The method of claim 32 wherein selecting a frame synchronization byte bit error rate includes selecting a number of permitted errors for each frame synchronization byte in the range from zero to the second plurality of errors, where each frame synchronization byte includes a second plurality of bits.

34. In a multidimensional digital frame structure, a system for selectively broadcasting, the method comprising:

a frame generator including an overhead generator to generate the overhead section of a frame, a payload generator to generate the payload section of the frame, and an encoder to provide forward error correction (FEC) for the frame; and

wherein the overhead generator includes an input to select node identifiers for insertion into the overhead section.

35. The system of claim 34 wherein the frame generator defines a frame having an overhead section with a first plurality of overhead section bytes;

wherein the overhead generator selects frame synchronization bytes for insertion into the broadcast frame overhead

section, where node identifiers are selected in response to the frame synchronization bytes.

36. The system of claim 35 wherein the overhead generator selects a plurality of node identifiers from a plurality of frame synchronization bytes.

37. The system of claim 36 wherein the overhead generator selects frame synchronization byte groups associated with node identifiers.

38. The system of claim 37 wherein the payload generator generates a message intended for a first node; and

wherein the overhead generator selects the first node identifier and inserts the frame synchronization bytes associated with the first node into the broadcast frame overhead section.

39. The system of claim 37 wherein the payload generator generates a message addressed to a first and a second node; and

wherein the overhead generator selects the first and second node identifiers, and inserts the frame synchronization bytes associated with the first and second node identifiers into the broadcast frame overhead section.

40. The system of claim 37 wherein the overhead generator selects the number of frame synchronization bytes in the overhead section, where node identifiers are associated with frame synchronization byte groups that are differentiated by quantity.

41. The method of claim 40 wherein the overhead generator selects the quantity of frame synchronization bytes in the range from zero to the first plurality.

42. The system of claim 37 wherein the overhead generator selects the location of frame synchronization bytes in the overhead section, where node identifiers are associated with frame synchronization byte groups that are differentiated by byte location.

43. The system of claim 42 wherein the overhead generator selects frame synchronization byte locations in the range from zero to a first plurality of locations.

44. The system of claim 37 wherein the overhead generator selects the value of frame synchronization bytes in the overhead section, where node identifiers are associated with frame synchronization byte groups that are differentiated by byte value.

45. The system of claim 44 wherein the overhead generator selects a second plurality of bits for each frame synchronization byte, where each byte includes a second plurality of bits.

46. In a multidimensional digital frame structure, a system for selectively receiving a broadcast message, the system comprising:

a frame receiver including an overhead receiver to receive the overhead section of a frame, a payload receiver to receive the payload section of the frame, and a decoder to provide a forward error corrected (FEC) frame; and

wherein the overhead receiver includes an input to acknowledge a node identifier for synchronizing the broadcast message.

47. The system of claim 46 wherein the overhead receiver acknowledges a node identifier for comparison to a node identifier in the overhead section of the broadcast frame.

48. The system of claim 47 wherein the frame receiver defines a frame having an overhead section with a first plurality of overhead section bytes; and

wherein the overhead receiver selects frame synchronization bytes for comparison to frame synchronization bytes in the broadcast frame overhead section, where node identifiers are associated with frame synchronization bytes.

49. The system of claim 48 wherein the overhead receiver selects frame synchronization bytes to form the acknowledged node identifier; and

wherein the overhead receiver groups received frame synchronization bytes, and compares the selected frame synchronization bytes with the received grouping of frame synchronization bytes.

50. The system of claim 49 wherein the overhead receiver acknowledges a node identifier from a plurality of node identifiers.

51. The system of claim 50 wherein the overhead receiver acknowledges a first node identifier; and

wherein the frame receiver synchronizes the broadcast frame in response to the overhead receiver acknowledging the first node identifier.

52. The system of claim 51 wherein the overhead receiver acknowledges a second node identifier; and

wherein the frame receiver does not synchronize the broadcast frame in response to the overhead receiver acknowledging the second node identifier.

53. The system of claim 50 wherein the overhead receiver acknowledges a node identifier by selecting frame synchronization bytes to form a group of frame synchronization bytes, differentiated from other frame synchronization byte groups by quantity.

54. The system of claim 53 wherein the overhead receiver acknowledges a node identifier by selecting frame synchronization bytes to form a group of frame synchronization bytes, differentiated from other frame synchronization byte groups by byte location.

55. The system of claim 53 wherein the overhead receiver acknowledges a node identifier by selecting frame synchronization bytes to form a group of frame synchronization bytes, differentiated from other frame synchronization byte groups by byte value.

56. The system of claim 53 wherein the overhead receiver selects a frame synchronization byte bit error rate; and

wherein the overhead receiver forms groups of received frame synchronization bytes having a bit error rate that is less than, or equal to, the selected bit error rate.

57. A multidimensional digital frame structure broadcast system, the system comprising:

a transmitter with a frame generator including an overhead generator having an input to accept commands for selecting node identifiers for insertion into broadcast frame overhead sections; and

at least one receiver with a frame receiver including an overhead receiver having an input to accept commands for selecting node identifiers, the overhead receiver synchronizing the broadcast frame in response to acknowledging the node identifier.

58. The system of claim 57 wherein the overhead generator selects a first node identifier for the broadcast frame; and

wherein a first overhead receiver acknowledges the first node identifier, and synchronizing the broadcast frame in response to acknowledging the first node identifier.

59. The system of claim 58 further comprising:

a second receiver; and

wherein the overhead receiver of the second receiver acknowledges the first node identifier, and synchronizes the broadcast frame in response to acknowledging the first node identifier.

60. The system of claim 58 further comprising:

a second receiver; and

wherein the overhead receiver of the second receiver acknowledges a second node identifier, and does not synchronize the broadcast frame in response to acknowledging the second node identifier.

61. The system of claim 58 wherein the overhead generator selects a first node identifier and a second node identifier for the broadcast frame; and

the system further comprising:

a second receiver; and

wherein the overhead receiver of the second receiver acknowledges a second node identifier, and synchronizes the broadcast frame in response to acknowledging the second node identifier.